

**58th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 3: AVIATION SAFETY

**TRUST AND COLLABORATION: KEY ENABLERS FOR DATA-
DRIVEN STATE SAFETY MANAGEMENT**

(Presented by the Republic of Korea)

SUMMARY

This paper highlights the essential role of trust-building and collaboration in achieving effective State Safety Program (SSP) implementation and data-driven aviation safety management by drawing on the Republic of Korea's experience.

TRUST AND COLLABORATION: KEY ENABLERS FOR DATA-DRIVEN STATE SAFETY MANAGEMENT

1. INTRODUCTION

1.1 In accordance with ICAO Annex 19, specifically Chapters 3 and 5, Collection and analysis of safety data and safety information is the key for successful establishment and implementation of State Safety Programme (SSP), especially for safety risk management and safety assurance. Following the relevant SARPs in ICAO Annex 19 as the basis, the Republic of Korea (ROK) has established a mechanism to effectively implement data-driven safety management at the State level by improving legislation and regulations, efforts to build trust with the service providers and development of analysis processes.

1.2 This paper aims to share the experience of the ROK with the DGCA member States and highlight the importance of various actions for building trust and collaboration, which need to be considered during the establishment of the mechanism for data-driven safety management.

2. DISCUSSION

Expansion of Safety Data Collection and Analysis Infrastructure

2.1 In 2019, the ROK laid down the legal foundation for the State Data Collection and Processing System (SDCPS) and established dedicated organizations and analytical facilities for its implementation. Substantial annual budget allocations have been directed towards continuous facility expansion, recruitment of specialized personnel, and the broadening of the spectrum of collected data types. These endeavors are geared towards securing the requisite infrastructure for the SDCPS.

2.2 In 2020, the CEOs of service providers have signed into a Memorandum of Understanding (MOU) for the collaborative sharing of aviation safety data. This initiative aimed to integrate diverse safety data held by service providers comprehensively and make them available for use in the state's aviation safety enhancement activities.

Legal and Regulatory Framework Enhancement

2.3 **Reinforcement of the Non-Punitive Reporting Principle:** In 2019, the ROK introduced a provision in the Aviation Safety Act that stipulates the confidentiality of safety reports to third parties and the immunity from penalties for reporters. In 2022, provisions were added to permit penalties against individuals for any adverse actions taken due to mandatory and voluntary reports or analysis results related to flight data, thereby reinforcing the non-punitive reporting principle.

2.4 **Enhancement of Data Processing and Protection Procedures:** In 2023, aviation authorities revised the State Safety Program document (regulation) to articulate detailed principles and procedures governing the collection, utilization, and protection of aviation safety data gathered for SSP implementation. This revision explicitly includes stringent prohibitions on the utilization of such data for purposes unrelated to safety enhancement, thereby strengthening protective mechanisms and minimizing unforeseen disadvantages to data providers.

Technological Research and Development

2.5 Commencing in 2020, a five-year project leveraged approximately 56 types of data to develop big data analysis technology (discovery and detection algorithms for precursors) and establish a platform for visualizing analysis results for informed decision-making. This research and development project involves the participation of six researchers and IT development firms in collaboration with two overseas research institutions. Regular demonstrations targeting aviation service providers are conducted, accompanied by consultations to glean insights from aviation experts. The data analysis technology developed under this project enables proactive identification of safety issues, facilitating

quantitative and predictive safety management.

Ongoing Communication and Needs Assessment

2.6 Annually, the ROK convenes the high-level Aviation Safety Committee between civil aviation authorities and service providers, where key safety issues are shared, and matters concerning the direction of national aviation safety policy and SSP operations are deliberated upon. At a working level, risk panel meetings and joint consultations are organized to conduct safety review and unearth safety issues in the national aviation landscape while performing national risk management.

2.7 Additionally, the ROK organizes diverse workshops, seminars, and educational forums such as Safety Reporting Activation Workshops, quarterly Aviation Safety Information Sharing Seminars, and quarterly Outreach Reporting System training. These initiatives foster dialogue with aviation service providers, serving the dual purpose of identifying their requirements for state safety management and their own safety management needs.

Achievements

2.8 Through the dissemination of the non-punitive reporting principles, the production of genuinely beneficial information for safety management, and efforts to nurture a positive safety culture, there has been a gradual transformation in the attitudes of aviation service providers toward aviation safety data. Notably, the ROK facilitated an agreement on the collection and analysis of flight data, which had been previously safeguarded by airlines. This was achieved through the High-Level Aviation Safety Committee in 2022. Currently, a working group comprising government, industry, and academic experts collaboratively analyzes flight data. This development is rooted in mutual trust in the aviation authorities' commitment to the non-punitive principles and the anticipation of future applications for analysis results.

2.9 Furthermore, ongoing efforts are being made to establish a real-time adverse weather information-sharing platform through cooperation among airlines, meteorological agencies, and aviation authorities. This initiative aims to mitigate the risk of “encounters with severe turbulence during flight,” a recently emerging concern.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) Note the content provided in this paper;
- b) Acknowledge the importance of the commitment of civil aviation authorities to “strengthening trust and collaboration between government and service providers” as a critical factor in achieving effective implementation of the SSP and data-driven state safety management;
- c) Encourage ICAO to continue efforts to promote and support the establishment of data-driven safety management systems within regional communities, including facilitating the sharing of case studies among Asia-Pacific States;
- d) Encourage States to actively participate in sharing their own experiences.